Patent Application of

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For

VIAL CLOSURE WITH INDICATOR

Background – Field of Invention

This invention relates to vial closures, specifically to such closures which are used for vials containing medicinal pills.

Background – Description of Prior Art

Pharmacies commonly dispense prescription medications in the form of pills. These pills are typically packaged in vials; that is, containers that are sealed with a closure. Two common types of closures are the simple snap-fit type, which is not resistant to opening by a child, and the "child-resistant" type, of which there are several different designs in use.

Ordinarily, prescription medication must be taken at more-or-less regular intervals. Failure to do so can result in ineffective treatment or other serious consequences, such as an overdose. Consequently, it is important for patients to not forget the number of pills they have taken.

It is well known in the art to incorporate some type of indicator into

In recent years there has been a number of patents granted for electronic timers with alarms that have been incorporated into closures. These devices all suffer from higher cost and greater complexity than simple mechanical solutions.

Mechanical devices in the prior art that incorporate indicators into closures invariably indicate time. The indicator in such devices would be set to the next time to take a pill, for example. U.S. Patent 5,279,422 to Adams this type of indicator. As it turns out, the vast majority of prescriptions for pills are written for 2, 3, 4, or 6 pills per day to be taken. Thus, it is really only necessary for a person to be reminded of how many pills they have already taken that day; this is far more useful than a time indication of when to take the next pill, or when the last pill was taken, especially because most people are probably not extremely precise about the time when a pill is taken.

Moreover, the devices shown in the prior art lack the necessary simplicity and low cost to be incorporated into the inexpensive packaging that is used for common prescriptions. Or, they lack the ability to be easily adapted for both the simple snap-fit type and child-resistant type of caps.

Objects of the Invention

Accordingly, it is the principal object of the present invention to provide an improved pill vial closure having a counter indicator to identify the number of pills previously taken within the day.

It is a further object of the present invention to provide an improved pill vial closure having a counter indicator that is easy to set by an elderly person or someone with visual or motor skills impairment.

It is a further object of the present invention to provide an improved pill vial closure having a counter indicator that is readily adaptable to both snap-fit closures and child-resistant closures.

It is a further object of the present invention to provide an improved pill vial closure having a counter indicator that is very low in cost to manufacture.

Drawing Figures

In the drawings, closely related figures have the same number but different alphanumeric suffixes.

Fig. 1A shows an exploded view of the preferred embodiment of the improved closure with indicator.

Fig. 1B shows the plan view of Fig. 1A

Fig. 1C shows a rotated section view about A-A in Fig. 1B.

Fig. 1D shows a plan detail of the indicator portion of Fig. 1A.

Fig 2 shows a second embodiment of the improved closure.

Fig. 3 shows a third embodiment of the improved closure.

Detailed Description of the Preferred Embodiments

Figs. 1, 2, and 3 show the preferred embodiments of a closure with indication means for medicine vials, consisting of two parts: the cap 10

cap 10. The cap 10 is attached to the vial (not shown) by any means known in the art, such as a snap-fit, thread, or child-proof locking means. Cap 10 is a hollow, short cylinder, closed by face 11. Said face has a plurality of equally spaced detents 12 to engage bosses 24 of indicator 20. Face 11 is further provided with a concentrically located cavity 13 to engage annulus 25 of the indicator, to secure the indicator to the cap, while allowing for free rotation. The indicator, in the preferred embodiment of Figs. 1, is made of a transparent material for viewing the indicia 23 printed on the inner face of the indicator. The indicia are printed in the same color as the cap 10, so that they are invisible for lack of contrast when the indicator is mounted to the cap. However, one of the indicia will aligned with the contrasting colored region 14 on the cap, and will therefore be visible through the transparent indicator. The indicator is provided with a projecting means 22 for grasping and turning the indictor relative to the cap. Obviously, as the indicator is turned, the detents will releasably disengage and then re-engage with the bosses of the indicator, thereby placing each indicia, in turn, in alignment with the contrasting colored region of the cap for viewing. The flexing action of the indicator and the cap allow the indicator to overcome the resistance of the detent when sufficient torque is applied to it.

In the second embodiment of the improved closure, cap 10 is printed with contrasting colored region 14 that underlies all the indicia of indicator 11 except for an opening 16 so shaped as to aligned with a single indicia on the indicator. In this embodiment, the indicia are printed in the

same color as the contrasting colored region, and are therefore invisible except when aligned with the opening 16 on the cap.

In the third embodiment of the improved closure, cap 10 is imprinted with the indicia, and the indicator 11 is made of an opaque material and provided with an aperture 26 for viewing a single indicia when it aligns with said aperture.

It is obvious from the above description that any of the three embodiments described would be adaptable to snap-type or child-proof versions of vial closures, and could be so constructed as to not impair the operation of either.

The present invention provides 12 indicia spaced around a circle near the rim of the indicator. For 2 pills per day prescriptions, the numbers will be 1-2-1-2-1-2-1-2-1-2-1-2. For 4 pills per days prescriptions, the numbers will be 1-2-3-4-1-2-3-4-1-2-3-4, and so forth. Twelve indicia divide evenly for prescriptions of 2, 3, 4, and 6 pills per day, which represents the vast majority of all prescriptions. In the preferred embodiment, the numbers are printed on the underside of the dial, in reverse, so that they appear correct when viewed through the transparent dial. An advantage of the embodiments of Figs. 1 and 2 is that they allow pharmacists to stock a minimum number of different components; they will need only 4 differently printed indicators (for the number of pills per day), all of the same size, and indicator will fit any size cap, since the engaging features on the cap and indicator will have the same dimensions, regardless of cap size.

Although the above description includes many specificities, these should not limit the scope of the invention. For example, there are multitudinous ways in which the snap connection between indicator and cap, and the detents could be accomplished.